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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/380,410	10/28/1999	FRANK JENAU	896	2584

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STRIKER STRIKER & STENBY
103 EAST NECK ROAD
HUNTINGTON, NY 11743

EXAMINER

DEB, ANJAN K

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 02/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/380,410

Applicant(s)

JENAU ET AL.

Examiner

Anjan K Deb

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Argument

1. This office action is in response to argument filed 1-9-02.

In response to applicant's argument that prior art cannot measure electric voltage by performing an integration of electric field strength across sensory crystals Nagatsuma et al. (US 4631402) teaches measuring voltage (V) by performing an integration of electric field strength (E) across sensory crystals (3) having lengths (l_1, l_2, l_3) shown in Fig. 10 as follows,

$$V = \int E \cdot dl = L \cdot E.$$

where $L = l_1 + l_2 + l_3$ disclosed by Nagatsuma et al. US 4631402 see equation 1.

The essence of this invention is a method and apparatus for measuring an alternating current electrical voltage by a sensor comprising plurality of sensor crystals placed in an electric field produced by the voltage to be measured. Electric voltage is measured by summation (integration) of the electric field strength measured across a plurality of sensory crystals. The prior art discloses this feature.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kakizaki et al (US 5053617) and further in view of Nagatsuma et al. (US 4631402).

Re claim 1, Kakizaki et al disclose a method for measuring an AC electrical voltage comprising at least one sensor 38 and evaluating means 32 using Pockel's effect, and at least one transmission path 26 and a light source 24. After light has traversed the sensor crystals it is evaluated to provide a measure of the voltage.

Kakizaki et al lacks a sensor having at least two sensor crystals.

Nagatsuma et al. discloses a sensor 3 having plurality of elements (sensor crystals), see column 7 lines 24-42, and Fig. 10.

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Kakizaki et al by adding plurality of elements disclosed by Nagatsuma et al. for

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measuring voltage by integration of electric field strength across plurality of sensor crystals (see Nagatsuma et al., column 4, line 55, equation 1).

Re claim 2, Kakizaki et al disclose changing a quantity of the light beam transmitted through the sensor with a change in the ambient temperature, see column 2 lines 40-45 and column 12 lines 26-29.

Re claims 3-6,17-20,25 Kakizaki et al. did not expressly disclose summation of voltages obtained from plurality of sensors.

Nagatsuma et al. discloses summation of voltages obtained from plurality of sensor crystals, see column 7 lines 24-42, and Fig. 10.

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Kakizaki et al. by summation of voltages obtained from plurality of sensor crystals disclosed by Nagatsuma et al for measuring voltage.

Re claims 7,8 Kakizaki et al disclose a DC component detector 56 and an AC component detector 58, see column 13 lines 55-60.

Re claims 9,10 Kakizaki et al disclose a method for measuring an AC electrical voltage comprising at least one sensor 38 and evaluating means 32 using Pockel's effect, and at least one

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transmission path 26 and a light source 24. After light has traversed the sensor crystals it is evaluated to provide a measure of the voltage.

Kakizaki et al lacks a sensor having plurality of electro-optical sensor crystals.

Nagatsuma et al. discloses a sensor 3 having plurality of elements (sensor crystals) penetrated by light, see column 7 lines 24-42, and Fig. 10.

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Kakizaki et al by adding plurality of electro-optical sensor crystals disclosed by Nagatsuma et al. for measuring voltage.

Re claims 11,12,14-16, Kakizaki et al discloses optical elements made of $\text{Bi}_{12}\text{GeO}_{20}$ and $\text{Bi}_{12}\text{SiO}_{20}$ (see column 5 lines 58-60 and column 16 lines 15,16).

Kakizaki et al did not expressly disclose optical elements made of $\text{Bi}_4\text{Ge}_3\text{O}_{12}$ and $\text{Bi}_4\text{Si}_3\text{O}_{12}$.

Nagatsuma et al. disclose plurality optical elements made of $\text{Bi}_4\text{Ge}_3\text{O}_{12}$ and $\text{Bi}_4\text{Si}_3\text{O}_{12}$, see column 1, lines 58-64.

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Kakizaki et al by adding plurality of optical sensor elements made of $\text{Bi}_4\text{Ge}_3\text{O}_{12}$ and $\text{Bi}_4\text{Si}_3\text{O}_{12}$ disclosed by Nagatsuma et al. for accurately measuring an electrical field.

Re claims 21-24, a function unit comprising, an integrator, low pass filter, and peak value detector are essential components of a light detection and measurement circuit comprised in the light detection circuit 30,32,34, AC and DC component detector 58,56 and voltage and temperature determining means 90, 86 see Fig. 6 disclosed by Kakizaki et al.

Final Rejection

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is (703) 308-2941. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. N. LE, can be reached at (703)-308-0750.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone numbers are (703)-308-0956 and (703)-305-4900.

AD

2/11/02



N. Le
Supervisory Patent Examiner
Technology Center 2800